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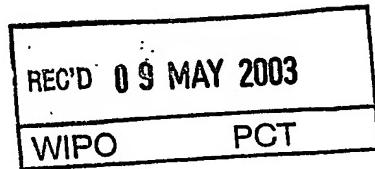


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Technical field of the invention

Availability of MS capability in BSS at negotiation of Quality of Service for Packet Switched services.

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Background

When running a Packet Switched (PS) service in a GPRS network a requested Quality of Service (QoS) shall be supported. The QoS is negotiated at activation of a Packet Data Protocol (PDP) context associated with the PS service. When the MS requests activation of a PDP context, the SGSN will send create of a Packet Flow Context (PPC) of the same QoS towards the BSS related to this specific MS. The creation of a Packet Flow Context is part of the Packet Flow Management Procedures between the SGSN and the BSS, see figure 1. The BSS will check whether the requested QoS may be supported using the capabilities of the cell, the available capabilities of the MS, the current load in the cell, among others.

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State-of-the-art

According to the present activation steps – step 6 in figure 1 – the BSS is not informed about the capabilities of the. Instead, the BSS will use default capabilities of the MS set in the BSS.

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Problem

In normal cases no data flow is currently going on for the MS at PDP context activation and the BSS does not know the capabilities of the MS when negotiating the Quality of Service. If the BSS does not know whether the MS is capable of GPRS or EGPRS, or the number of timeslots the MS is capable of, the evaluation of whether the QoS may be supported in the current cell may not be correct.

This is especially a problem for the attributes stating a requested bitrate such as Guaranteed bitrate and Maximum bitrate, which is dependant on the RAC of the MS. Thus the BSS may accept a too high bitrate or modify to a too low bitrate because enough information was not available. At a later stage when the data transmission is started for the PS service, either the accepted bit rates may not be supported which might lead to a re-negotiation of the QoS, or the user perceives an unacceptable quality of the service.

For some services a re-negotiation of the QoS is not acceptable. An example is Streaming services where at start up of the

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session a bit rate coding is selected. The selected bit rate coding is used as input to the requested QoS at PDP context activation. If the GPRS network accepts the QoS, the Streaming application will start running using the accepted bit rate coding. If the BSS then re-negotiates the QoS at the actual start of data transmission over the radio interface, the application may not be able to handle the change of bit rate coding. This might lead to a disconnection of the session.

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Solution

The negotiation of QoS between the GPRS network and the MS is made before a data transfer is started. At PDP context activation the SGSN receives information about the Radio Access Capabilities (RAC) of the MS. When performing the Packet Flow Management (PFM) procedures on the Gb-interface between the SGSN and the BSS, the RAC of the MS shall be included during set up. According to a preferred embodiment of the invention the RAC of the MS shall be included in the message Create BSS PFC sent by the SGSN to the BSS i.e step 6 in figure 1. Then the BSS may do a correct calculation of whether all the attributes in the requested QoS may be supported for this MS in the current cell or not.

At reception of the MS RAC in the BSS, the BSS may store the MS RAC in the BSS context related to the MS. The MS RAC may then be used for future negotiations of the QoS in the PFM procedures for the MS. The MS RAC may also be used for setting up a connection for the MS on radio resources corresponding to the supported number of TS, supported GSM bands and supported other radio-related features of the MS. The knowledge of the MS RAC at the set-up of an MS connection decreases the need for a later re-assignment of other radio resources to the MS.

Whenever a BSS context related to an MS is deleted in the BSS, the MS RAC stored in the BSS context is also deleted from the BSS.

1.5.1

Some other relevant documents (incorporated herein by reference)

3GPP TS 48.018 3rd Generation Partnership Project; Technical Specification Group GSM EDGE Radio Access Network; General Packet Radio Service (GPRS); Base Station System (BSS) - Serving GPRS Support Node (SGSN); BSS GPRS Protocol (BSSGP).

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ERICSSON RADIO SYSTEMS → PRU HUVUDFAX

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Claims

1. Method in a packet data transfer communication system having mobile stations communicating with a base station system over a radio interface and controlled by a network control element wherein during set up of a communication link the network element is informed of the radio access capabilities of the mobile station characterised in that during a following set up step the capabilities is transferred to the base station system.
2. Method of claim 1 wherein the capabilities include the multislot class, GPRS/EGPRS capability and /or power capability of the mobile station.
3. Method of claim 1 or 2 wherein the capabilities is sent in the message "create BSS PFC" sent by SGSN to the BSS during a PDP Context Activation procedure for GPRS.

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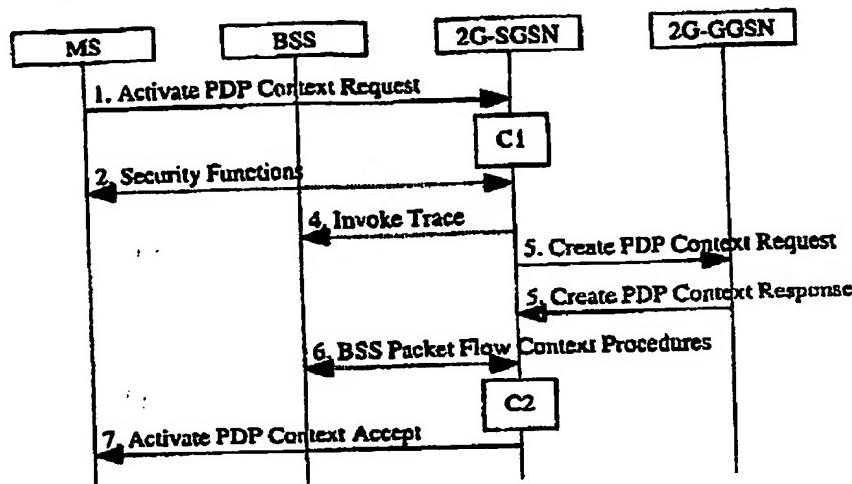


Figure 1. PDP Context Activation procedure for GPRS (see
3GPP TS 23.060 incorporated herein as background reference)

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